NON-TARGET HAZARDS TO GALLINACEOUS BIRDS IN SIMULATED FIELD STUDIES USING ZINC PHOSPHIDE TO CONTROL VOLES

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Abstract: Zinc phosphide (Zn_3P_2) is an acute rodenticide, and its mode of action is attributed to the release of phosphine (PH_3) gas during hydrolysis from stomach acids in the gastrointestinal tract of poisoned animals. Death typically results from cessation of respiration. Of the avian species tested, waterfowl and gallinaceous birds are the most sensitive to this toxicant. An investigation was conducted by the Denver Wildlife Research Center (DWRC) at Oregon State University's (OSU) Hyslop Farm to determine the potential non-target hazards to ring-necked pheasants (Phasianus colchicus) and California quail (Callipepla californica) when using a "rodent bait zinc phosphide treated grain (2%)" (EPA Reg. No. CA890027). The simulated field study was undertaken in 0.5-acre enclosures planted in alfalfa (Medicago sativa) and performed in cooperation with staff of the OSU Department of Fisheries and Wildlife. Efficacy data from broadcast baiting using 2% Zn_3P_2 crimped oat groats for control of gray-tailed voles (Microtus canicaudus) was obtained for the California Department of Food and Agriculture (sponsors). Voles were introduced and established within each enclosure (23 or 24) prior to baiting. Similarly, pen raised pheasants (52) and quail (51) were randomly assigned, controlling for weight, to either pheasant or quail enclosures, with 8 or 9 birds per enclosure. All birds were provided water and game bird flight conditioner ad libitum. Following an acclimation and pre-baiting period of 7 days, treatment or control bait (3 enclosures each) was randomly applied to 6 enclosures assigned to each bird species. 24 pheasants and 24 quail were equipped for radiotelemetry and their locations and movements were monitored twice daily. Zn_3P_2 deaths were confirmed by necropsy and the number of treated oat groats eaten by each bird was determined. Control and surviving birds were euthanatized and also examined. Zn_3P_2 mortality was associated with 62% (16/26) of the treated pheasants and none (0/26) of the treated quail. Nearly 60% (61/103) of the birds survived the 14 day trial, and the other birds were lost to predators (4%) and accidents (7%), or were missing at the completion of the study (13%).